REMARKS

In accordance with the foregoing, claim 1 is amended to correct informalities. No new matter is added. Claims 1-8 are pending and under consideration.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

Claims 1-3 and 5-7 are rejected under 35 U.S.C. §103 as allegedly being unpatentable over Applicant Admitted Prior Art (AAPA) in view of U.S. Patent No. 5,506,863 to Meidan et al. (hereinafter "Meidan").

Independent claim 1 patentably distinguishes over the applied prior art at least by reciting:

- transmitting **a reference local oscillation signal** from a transmitting station;
- receiving the reference local oscillation signal from the transmitting station, **amplifying and band filtering the received signal, regenerating the reference local oscillation signal by an injection synchronous oscillator or an amplifier in each of the wireless communication terminals**;
- modulating a transmission signal in a frequency hopping system **using the regenerated reference local oscillation signal**; and
- performing mutual communications using the transmission signal which is demodulated in each receiving wireless communication terminal of the plurality of wireless communication terminals **using the regenerated reference local oscillation signal**.

In the Amendment filed on October 9, 2009, Applicants argued that AAPA describes modulation and demodulation being performed using local oscillation signals generated in each of the wireless communication terminals. The local oscillation signals are not a reference local oscillation signal that is regenerated in each station from the same reference local oscillation signal output by a transmitting station as recited in claim 1. Applicants further asserted that, a person of ordinary skill in the art would recognize that **by regenerating a reference local oscillation signal both time and frequency synchronization are achieved**.

In the "Response to Remarks" section of the outstanding Office Action, the Examiner appears to respond to applicant's argument by stating:

> One skilled in the art would know that in order to achieve synchronization between a transmitter (base station) and a receiver (mobile station) the transmitter must be able to transmit a

> reference signal (synchronization signal) to the receiver. Prior art does suggest the teaching of regenerating a reference signal sent by the transmitter in order to achieve synchronization. (See fig. 7 & ¶3-4.)

FIG. 7 of the specification illustrates the configuration of the receiver in the conventional frequency hopping system (see paragraph [0010] on page 5 of the specification). Paragraph [0003] of the specification describes FIGS. 6 and 7 that illustrate configurations of a conventional transmitter and a conventional receiver, respectively, of a wireless communication system using a frequency hopping system. None of these cited portions of the specification appear to support the Examiner's position that "prior art does suggest the teaching of regenerating a reference signal sent by the transmitter in order to achieve synchronization."

Paragraph [0004] of the specification is reproduced below:

> In this case, to maintain the quality of the transmitted signal, and to obtain a substantial interference suppression effect by a frequency hopping, **it is necessary to maintain a predetermined frequency difference between the output of the hopping synthesizer used in a transmitter and the output of the hopping synthesizer used in a receiver**, and **to maintain small time fluctuation for a phase difference**. Therefore, it is necessary that the hopping synthesizer to be used in a transmitter and a receiver is stable in frequency, has low phase noise, and is highly responsive. Especially, in a high-frequency microwave area, various methods for stabilization, lower noise, etc. using a dielectric oscillator or a PLL (phase lock loop) are devised. (Emphasis added.)

In spite of providing no further support to the Examiner's position, the above-reproduced paragraph of the specification is useful to prove below the non-obvious patentable features and their effect. Paragraphs [0006]-[0007] the specification point out the advantage of using a regenerated reference local oscillation signal based on a reference local oscillation signal received from the transmitting station. Specifically, the "wireless system in a frequency hopping system [is] free of the effect of a local oscillator for a frequency conversion or the unstable frequency of a hopping synthesizer" and is "a small and low-cost system capable of applying without a highly stable local oscillator or hopping synthesizer a frequency hopping system in a very high frequency area such as a milliwave band in which the frequency hopping system has conventionally been very difficult."

There is no evidence supporting the Examiner's position. *See* M.P.E.P. § 2144.03(B) ("there must be some form of evidence in the record to support an assertion of common knowledge"). It appears that the rejection is based, at least in part, on personal knowledge. 37

C.F.R. § 1.104(d)(2) requires such an assertion to be supported with an affidavit when called for by the Applicants. Thus, Applicants call for support for the Examiner's position with an affidavit.

The Examiner's position, which is not supported by the AAPA, is not considered to be common knowledge or well-known in the art. In this case, the limitation is not of notorious character or capable of instant and unquestionable demonstration as being well-known. Instead, this limitation is unique to the present invention. *See* M.P.E.P. § 2144.03(A) ("the notice of facts beyond the record which may be taken by the Examiner must be "capable of such instant and unquestionable demonstration as to defy dispute").

Meidan, which discloses that wireless communication terminals synchronize their local oscillation signals using a reference time received from a GPS. The Examiner takes the position that "Meidan does teach transmitting a synchronization signal (reference signal) to a receiver in order to achieve synchronization. (See figs. 1 & 2. col. 6, lines 61-65 & col. 10, lines 10-25)" However, the indicated portions of Meidan or Meidan as a whole do not disclose or render obvious **frequency synchronization** but only time/phase synchronization. In col. 7, lines 5-12, Meidan discloses that in a Slow Frequency Hopping communication system a mobile station receives control information consisting of a frequency correction channel and a synchronization channel. However, using correction information means achieving a slow response, and the correction refers to the hopping pattern and not to the local oscillation signal. Therefore, Meidan does not correct or compensate for the above-identified failure of the prior art to render obvious the frequency synchronization achieved by regenerating the reference local oscillation signal.

The Examiner appears to ignore Applicants' further assertion that a person of ordinary skill in the art would recognize that **by regenerating a reference local oscillation signal both time and frequency synchronization are achieved**. AAPA or Meidan do not render obvious the dual (1) time and (2) frequency synchronization. Meidan achieves only time synchronization. The Examiner appears to consider only the time synchronization (i.e., same phase of the local oscillations). The non-limiting embodiment illustrated in FIG. 2 makes it clear that a spectrum of the reference signal does not change with time (see FIG. 2 and paragraph [0013] on page 7 of the specification). The AAPA makes it clear that frequency synchronization is one of the problems of the prior art (see page 3, lines 6-10 of the specification).

In addition to the previously-presented arguments, Applicants respectfully submit that the applied prior art fails to render obvious "transmitting **a reference local oscillation signal** from a transmitting station." That is, signals communicated from a base station to a mobile station are not an oscillation and are not the reference oscillation signal.

In view of the above, Applicants respectfully reiterate their request that the Examiner to present evidence that the "synchronization" due to the purported reference signals in AAPA and Meidan ensures frequency matching.

Claims 2 and 3 are also patentable at least by inheriting patentable features from claim 1.

In view of the above arguments, claim 5 and claims 6 and 7 depending from claim 5 patentably distinguish over the cited prior art because at least the following features recited in claim 5 are not rendered obvious by AAPA and Meidan:

- a receiving unit that amplifies and band filters **a signal received from the transmitting station to regenerate the reference local oscillation signal by an injection synchronous oscillator or an amplifier**, and generates an intermediate frequency band demodulation signal downconverted by multiplying a received radio modulation signal by the reference oscillation signal, and demodulates the intermediate frequency band demodulation signal in the intermediate frequency band modem; and
- a transmitting unit that generates and transmits a radio modulation signal by multiplying an intermediate frequency band modulation signal from an intermediate frequency band modem by **the reference local oscillation signal**.

Claims 4 and 8 are rejected under 35 U.S.C. §103 as allegedly being unpatentable over AAPA and Meidan and further in view of U.S. Patent No. 6,130,905 of Wakayama ("Wakayama") and "Proposal of Millimeter-wave Self-heterodkyne Communication System", Communications Research Laboratory, Ministry of Posts and Telecommunications, June 2000 to Yozo Shoji et al. ("Shoji").

Relative to claim 4, none of the cited references alone or in combination render obvious "simultaneously transmitting a frequency hopping radio modulation signal [...] and the local oscillation signal used in the upconverting" as recited in claim 4. The outstanding Office Action fails to respond to the Applicants' arguments in the Amendment filed on October 9, 2009 and asserts again that "Wakayama discloses extracting two signal components, a local oscillation signal that is the local oscillation signal used in the upconverting the modulation signal, and a modulation signal component, by passing the downconverted signal through a band pass filter" (see page 10, lines 6-9 of the outstanding Office Action).

Wakayama discloses a wireless communication device for performing bi-directional communication using a frequency hopping method, in which the communication time at any one

frequency can be varied (see Wakayama's abstract). FIGS. 1 and 3 of Wakayama, which are indicated in support to this statement, illustrate "a block diagram of a communication device used in a conceivable wireless communication systems" and "a block diagram of a communication device for achieving wireless communication according to a first embodiment of the present invention." Applicants respectfully submit that the indicated figures in Wakayama or the whole disclosure therein do not disclose or render obvious extracting a local oscillation signal that is the local oscillation signal used in the upconverting the modulation signal.

37 C.F.R 1.104(c)(2) requires

> In rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.

In this case, Wakayama is a complex reference and the Examiner has failed to make a *prima facie* case of obviousness by explaining the relevance of the reference.

Additionally, the outstanding Office Action does not respond to the Applicants' arguments that the AAPA, Meidan, Wakayama, and Yozo form a whole. Applicants maintain that the features recitedin the claims are parsed out of context and that the various reasons for combining the prior art are disconnected from the purpose of the claimed method. The rejection is an impermissible hindsight reconstruction based on juxtaposing unrelated teachings of the references.

In view of the above, independent claim 4 patentably distinguishes over the prior art at least by reciting "simultaneously transmitting a frequency hopping radio modulation signal [...] and the local oscillation signal used in the upconverting." As illustrated in a non-limiting embodiment in FIG. 5 of the specification, the local oscillation signal (black peak) is transmitted together with the double sided frequency hopping modulated signal (grey bands in FIG. 5). Therefore, since such a transmission is not contemplated, the cited prior art references do not render obvious "downconverting a received signal by the receiving unit to a first intermediate frequency band signal using a local oscillation signal frequency hopping in a pattern obtained by adding a fixed frequency offset to a frequency hopping pattern corresponding to a desired reception wave, and then extracting two signal components, a local oscillation signal component that is the local oscillation signal used in the upconverting the modulation signal, and a modulation signal component, by passing the downconverted signal through a band pass filter,

and generating a product component of the two signal components, thereby regenerating a second intermediate frequency band modulation signal." At least for these reasons claim 4 is patentable over the cited prior art.

Similarly, independent claim 8 is also patentable at least by reciting that "the transmitting unit [...] simultaneously transmits a frequency hopping radio modulation signal [...] and the local oscillation signal used in the upconversion" and "the receiving unit downconverts a received signal to a first intermediate frequency band signal using a local oscillation signal frequency hopping in a pattern obtained by adding a fixed frequency offset to a frequency hopping pattern corresponding to a desired reception wave, and then extracts two signal components, that is, a local oscillation signal component that is the local oscillation signal used in the upconverting the modulation signal, and a modulation signal component, by passing the downconverted signal through a band pass filter, and generates a product component of the two signal components, thereby regenerating a second intermediate frequency band modulation signal."

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

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By: _____

Luminita A. Todor
Registration No. 57,639

1201 New York Avenue, N.W., 7th Floor
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501